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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/573,918

11/17/2006

Eric Lescouet

4786-5

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23117 7590 08/30/2010
NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203

EXAMINER

KAWSAR, ABDULLAH AL

ART UNIT

PAPER NUMBER

2195

MAIL DATE

DELIVERY MODE

08/30/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/573,918	Applicant(s) LESCOUET ET AL.	
	Examiner ABDULLAH AL KAWSAR	Art Unit 2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>3/4/2008</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-32 are pending.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

- i. 2012 on page 11, line 5;
- ii. 2014 on page 11, line 20;
- iii. 2022 on page 12, line 5;
- iv. 2028 on page 13, line 1;
- v. 2024 on page 12, line 15;
- vi. 2026 on page 12, line 18;
- vii. 2026 on page 15, line 11;
- viii. 207 on page 13, line 6;
- ix. 403 on page 13, line 15; and
- x. 101 on page 24, line 22.

3. The drawings are objected to because the drawing figure 9a, 9b, 10, 11, 12 and 13 are not clear to understand the elements of the drawings.

4. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet,

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even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. The disclosure is objected to because of the following informalities: please update the status of the priority application with the updated status of the application (patent/publication no). Appropriate correction is required.

6. The disclosure is objected to because of the following informalities: the examiner notes the use of acronyms (e.g. IDE, SCSI, etc.) throughout the specification without first including a description in plain text, as required.

7. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

Claim Objections

8. Claim 29, 30 are objected to because of the following informalities:

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a. Claim 29 is dependent on nonexistent claim 36. For the purpose of examination, examiner is examining the claim as being dependent on claim 26.

b. Claim 30, line 2, please replace “;” with “:”.

Appropriate correction is required.

Double Patenting

9. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

10. Claims 1, 12-24, 26, 27, 28-30 and 31 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-14, 20, 21, 25, 26, 28 and 29 of copending application no. 10/552,608. This is a statutory provisional double patenting rejection since the conflicting claims have not in fact been patented.

11. Claims 1, 12-17, 20-24, 26-28, 30 and 31 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1, 10-15, 18, 19, 21, 22, 26, 27, 30, 33 and 34 of copending Application No.10/573,881. This is a statutory provisional double patenting rejection since the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 8-10 and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- a. The following claim languages are unclear and indefinite:
 - i. As per claim 8, line 2 recites “operable” the claim language “operable” is indefinite and does not mandate the software to run in real mode. Line 2 recites “in real mode” it is unclear what constitutes real mode(i.e. the application is running in real mode(not virtualized)? The application is running in read mode of the processor disabling the memory management unit?).
 - ii. Claim 9, line 2 recites “the common program, and switching to real mode” it is unclear what constitutes the application switching in real mode (i.e. application is executing by switching the processor in real mode?).
 - iii. Claim 10 has similar deficiency as claim 9 above.
 - iv. Claim 32, line 1 recites “the system, product or method of claim 1” it is unclear if the claim is a system, product or method claim as the independent claim is a method claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

13. Claims 1-4, 6-7, 12-22, 25-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Ohno et al.(US Patent No. 6,715, 016).

14. As per claim 1, Ohno teaches the invention as claimed including a method of enabling multiple different operating systems to run concurrently on the same computer (figure 1), comprising:

selecting a first operating system to have a relatively high priority (col 3, lines 53-55; OS-B);

selecting at least one second operating system to have a relatively lower priority (col 3, lines 39-42; lines 53-57; OS-A);

providing a common program arranged to switch between said operating systems under predetermined conditions (col 3, lines 59-65); and

providing modifications to said first and second operating systems to allow them to be controlled by said common program (col 1, lines 64-67 through col 2, lines 1-19).

15. As per claim 2, Ohno teaches wherein switching between said operating systems includes invoking the common program using exception vectors (col 3, lines 59-65).

16. As per claim 3, Ohno teaches allocating exception vectors to trap calls, thereby to enable invocation of the common program using a trap call mechanism (col 3, lines 59-67 through col 4, lines 1-2).

17. As per claim 4, Ohno teaches wherein the first or second operating system invokes the common program by calling an exception vector (col 6, lines 35-38).

18. As per claim 6, Ohno teaches wherein the common program preempts the first or second operating system by intercepting exception or interrupt vectors (col 7, lines 21-54).

19. As per claim 7, Ohno teaches using a exception handler table containing an array of pointers to intercept exceptions, and activating an exception handler program to preempt the first or second operating system (col 4, lines 38-41).

20. As per claim 12, Ohno teaches in which the first operating system is a real time operating system (col 3, lines 53-55).

21. As per claim 13, Ohno teaches in which the second operating system is a non-real time, general-purpose operating system (col 3, lines 39-42).

22. As per claim 14, Ohno teaches in which the second operating system is Linux, or a version or variant thereof (col 3, lines 39-42).

23. As per claim 15, Ohno teaches in which the common program is arranged to save, and to restore from a saved version, the processor state required to switch between the operating systems (col 2, lines 4-11).

24. As per claim 16, Ohno teaches in which processor exceptions for the second operating system are handled in virtual fashion by the common program (col 8, lines 41-45).

25. As per claim 17, Ohno teaches in which the common program is arranged to intercept some processor exceptions, and to call exception handling routines of the first operating system to service them (col 7, lines 21-41).

26. As per claim 18, Ohno teaches in which the processor exceptions for the second operating system are notified as virtual exceptions (col 8, lines 33-49).

27. As per claim 19, Ohno teaches in which the common program is arranged to call an exception handling routine of the second operating system corresponding to a said virtual exception which is pending (col 8, lines 33-49).

28. As per claim 20, Ohno teaches further comprising providing each of said operating systems with separate memory spaces in which each can exclusively operate (col 4, lines 65-67 through col 5, lines 1-2).

29. As per claim 21, Ohno teaches further comprising providing each of said operating systems with first input and/or output devices of said computer to which each has exclusive access (col 3, lines 24-28; col 4, lines 38-46).
30. As per claim 22, Ohno teaches in which each operating system accesses said first input and/or output devices using substantially unmodified native routines (col 4, lines 58-64).
31. As per claim 25, Ohno teaches in which the common program provides trap call mechanisms, to control the operation of the second operating system, and/or event mechanisms to notify the first operating system of status changes in the second operating system (col 7, lines 55-60).
32. As per claim 26, Ohno teaches combining said operating systems and common program into a single code product (col 1, lines 64-67 through col 2, lines 1-4).
33. As per claim 27, Ohno teaches embedding said operating systems and common program onto persistent memory on a computer product (col 2, lines 20-23).
34. As per claim 28, Ohno teaches a development kit computer program product comprising code for performing the steps of claim 1 (col 2, lines 20-23).

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35. As per claim 29, Ohno teaches a computer program product comprising code combined according to claim 36 (col 1, lines 64-67 through col 2, lines 1-4).

36. As per claim 30, Ohno teaches the invention as claimed including a computer system comprising a CPU, memory devices and input/output devices (col 2, lines 57-65; figure 1), having executing thereon computer code comprising;

a first operating system having a relatively high priority (col 3, lines 53-55);

a second operating system having a relatively lower priority (col 3, lines 39-42; lines 53-57); and

a common program arranged to run said operating systems concurrently by switching between said operating systems under predetermined conditions (col 3, lines 59-65).

37. As per claim 31, Ohno teaches a computer system according to claim 28, arranged to run said first and second operating systems concurrently using the method as described above (col 3, lines 39-52).

Claim Rejections - 35 USC § 103

38. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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39. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohno et al.(US Patent No. 6,715,016), in view of Blanset et al.(US Patent No. 4,747,040).

40. As per claim 8, Ohno does not specifically disclose teaches wherein the common program is operable in real mode (col 3, lines 53-67 through col 4, lines 1-6).

However Blanset teaches wherein the common program is operable in real mode (col 4, lines 36-41; col 8, lines 12-67)

41. It would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Blanset into the method of Ohno to have the common program operable in real mode. The modification would have been obvious because one of the ordinary skills of the art would be motivated to utilize the teaching of Blanset to operate the common program in real mode to have real memory access to the physical memory without simulating the memory address mapping for better system execution control.

42. As per claim 9, Blanset teaches preempting the first or second operating system by the common program, and switching to real mode when preempting the first or second operating system (col 8, lines 12-67; col 12, lines 64-68 through col 13, lines 1-12).

43. As per claim 10, Blanset teaches invoking the common program by the first or second operating system, and switching to real mode when invoking the common program (col 8, lines 12-67; col 12, lines 64-68 through col 13, lines 1-12).

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44. Claims 5, 11 and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohno et al.(US Patent No. 6,715,016), in view of Endo et al.(US Patent No. 6,615,303).

45. As per claim 5, Ohno does not specifically disclose wherein calling an exception vector to invoke the common program simulates an exception caused by an external event.

However Endo teaches wherein calling an exception vector to invoke the common program simulates an exception caused by an external event (col 6, lines 38-60).

46. It would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Endo into the method of Ohno to have the common program call exception vector for external events. The modification would have been obvious because one of the ordinary skills of the art would be motivated to utilize the teaching of Endo to manage external interrupts in an operating system by calling the exception vector for being able to service the external events or interrupts.

47. As per claim 11, Endo teaches enabling hardware interrupts throughout the operation of the second operating system except during the operation of subroutines that save machine state (col 9, lines 24-67; OS switch is initiated and the context is stored before performing any other operation and no other operation is performed before and during the OS context is stored that will include any interrupts).

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48. As per claim 23, Ohno do not specifically disclose providing each of said operating systems with access to second input and/or output devices of said computer to which each has shared access (figure 11, element 192).

However Endo teaches providing each of said operating systems with access to second input and/or output devices of said computer to which each has shared access (figure 11, element 192).

49. As per claim 24, Endo teaches in which all operating systems access said second input and/or output devices using the routines of the first operating system (col 12, lines 63-67).

50. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohno et al.(US Patent No. 6,715,016), in view of Cota-Robles(US PG PUB 2003/0037089).

51. As per claim 32, Ohno does not specifically disclose in which the computer has a Reduced Instruction Set architecture.

However Cota-Robles teaches in which the computer has a Reduced Instruction Set architecture (par. 0042).

52. It would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Cota-Robles into the method of Ohno to have the computer with reduced instruction set architecture. The modification would have been obvious because one of the ordinary skills of the art would be motivated to utilize the teaching of Cota-

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Robles to have reduced architecture set for executing the applications with better memory management.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ABDULLAH AL KAWSAR whose telephone number is (571)270-3169. The examiner can normally be reached on Monday to Thursday between 8:00am to 6:00pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng Ai T. An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Li B. Zhen/
Primary Examiner, Art Unit 2194

/Abdullah-Al Kawsar/
Examiner, Art Unit 2195